Serial No.: 10/563,385
Appeal Brief dated December 22, 2008
Advisory Office Action Dated: October 31, 2008

PATENT
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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Applicants: Jun Li, et al.

Examiner: Brandt, Christopher M.

Serial No: 10/563,385

Group Art Unit: 2617

Filed: January 5, 2006

Docket: PU030023

For: OVERLAY MICRO CELL STRUCTURE FOR UNIVERSAL MOBILE TELEPHONE SYSTEM NETWORK

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APPEAL BRIEF

Applicants appeal the status of Claims 1-12 as presented in response to the Office Action dated April 10, 2008, and finally rejected in the Office Action dated September 4, 2008, and the Advisory Action dated October 31, 2008 pursuant to the Notice of Appeal filed November 14, 2008 and submit this appeal brief.

CERTIFICATE OF TRANSMISSION

I hereby certify that this correspondence is being transmitted via facsimile to Mail Stop Appeal Brief-Patents, Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450 on December 23, 2008 at facsimile number (571) 273-8300:

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1. Real Party in Interest

The real party in interest is THOMSON LICENSING, the assignee of the entire right title and interest in and to the subject application by virtue of assignments recorded with the Patent Office on January 5, 2006 at reel/frame 017452/0346 and reel/frame 017452/0465.

2. Statement of Related Cases

A prior notice of appeal was filed on December 17, 2008 and an appeal brief filed on January 25, 2008. Board action was not taken at that time because examination was reopened by the Examiner pursuant to a revised search executed on April 10, 2008. As a result of the subsequent search, the rejection of Claims 1-12 with respect to reference Copley was withdrawn and new reference U.S. Patent Publication No. 2003/0185178 A1 to Chitrapu was substituted in a rejection presented in the following Office Action dated April 10, 2008.

3. Jurisdictional Statement

The Board has jurisdiction under 35 U.S.C.§134(a). The Examiner mailed a final rejection on September 4, 2008, setting a three-month shortened statutory period for response. The time for responding to the final rejection expired on December 4, 2008. An Advisory Action was also mailed by Examiner on October 31, 2008. The latter of the mailing date of the final rejection 3 month shortened statutory period and the mail date of the Advisory Action is the December 4, 2008 date. A notice of appeal was filed on November 14, 2008. The time for filing

an appeal brief is two months after the filing of a notice of appeal. The time for filing an appeal brief expires on January 14, 2009.

4. Table of Authorities

Court and Administrative Decisions

Statutes

5. Status of Amendments

A preliminary amendment filed on January 5, 2006 was entered. An amendment under 37 CFR §1.111, sent to the PTO on October 27, 2006 in response to the non-final Office Action dated August 3, 2006, was entered. An amendment under 37 C.F.R. §1.116, sent to the PTO on March 1, 2007 in response to the Final Office Action dated January 4, 2007, was entered upon the filing of a Request for Continued Examination on April 5, 2007. An amendment under 37 CFR §1.111, sent to the PTO on July 23, 2007 in response to the non-final Office Action dated May 3, 2007, was entered. An amendment under 37 CFR §1.111, sent to the PTO on June 5, 2008 in response to the non-final Office Action dated April 10, 2008, was entered. An amendment under 37 CFR §1.116, was sent to the PTO on October 21, 2008 in response to the final Office Action dated September 4, 2008. No Responses/Amendments were filed subsequent to the above Amendment sent on October 21, 2008.

6. Grounds of Rejection to be reviewed on Appeal

Claims 1-12 stand rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent Publication No. 2003/0013452 A1 to Hunt et al. (hereinafter 'Hunt') in view of U.S. Patent Publication No. 2003/0185178 A1 to Chitrapu.

Regarding the grouping of the Claims, Claims 2-5 stand or fall with Claim 1, due to their respective dependencies, and Claims 7-12 stand or fall with Claim 6, due to their respective dependencies.

7. Statement of Facts

[0001] In rejecting Claims 1 and 6 the Examiner cites Hunt (abstract, paragraphs 4-5, 10, 23, 28-30, and FIG. 2). Hunt describes a hierarchical cellular radio communication system comprising a plurality of pico cells (106) and an umbrella macro cell (102), each cell having a controlling primary station (104, 108) (Hunt, abstract). A secondary station (110) has a communication channel with the system split into a control sub-channel (212), for the transmission of control information, and a data sub-channel (214), for the transmission of user data (Hunt, abstract). The control sub-channel connects the secondary station to the primary station serving the macro cell while the data sub-channel connects the secondary station to the primary station serving the pico cell (Hunt, abstract). The control portions of the channel are largely served by the umbrella macro cell to reduce the overheads of frequent mobility management, while the data portions are largely served by the pico cells which can support high data rates and large data density (Hunt, abstract). The communication link between a pico cell and the secondary station may be unidirectional, typically operable only in a downlink direction (Hunt, paragraph 0012). When there is a data packet to be transmitted to the user, the macro cell 102 routes the data to the identified pico cell 106, and sends notification to the MS 110, via the control sub-channel 212 between the macro cell 102 and the MS 110, that it should receive a data packet using the particular data sub-channel 214 allocated for use by the pico cell 106 (Hunt, paragraph 0029). [0002] In rejecting Claims 1 and 6 the Examiner further cites Chitrapu (paragraphs 74, 80). Chitrapu describes wireless telecommunications systems and in particular to Time Division Duplex-Radio Local Area Network (TDD-RLAN) Code Division Multiple Access (CDMA) systems and connection and communication of such systems with the Internet

(Chitrapu, Field of Invention). A Radio Access Network Internet Protocol Gateway (RAN IP Gateway or RIP Gateway) has a Gateway General Packet Radio Service (GPRS) Support Node (GGSN) with access router functions for connection with the Internet (Chitrapu, paragraph 0024). Whenever a user equipment (UE) communicating with a Node B of the radio local area network (RLAN) moves outside the RLAN service region, handover is implemented via the RAN IP gateway utilizing packet service, preferably, implemented with Mobile IP v4 or Mobile IP v6 (Chitrapu, paragraph 0074). Chitrapu's RAN IP gateway provides connectivity for the RLAN outside its service coverage area, specifically to accommodate communication between a first UE having a wireless connect ion with the RLAN and a second UE outside the wireless service region of the RLAN (Chitrapu, paragraphs 0063 and 0067). In this case, user data from the first UE is sent in IP packet format from the RAN IP gateway of the RLAN through the Internet to the address provided by the second UE (Chitrapu, paragraph 0067).

[0003] The present invention in Claims 1 and 6 provides a method for achieving wireless communication in a network having at least one macro cell for communicating both voice and data with a mobile communications device across a first wireless link, at least one micro cell, with a smaller coverage area and higher capacity per user than the macro cell, for communicating data with the mobile communications device across a second wireless communications link, the method comprising the steps of communicating signaling information directly between the one micro cell and the one macro cell via a third wireless channel in response to access of the micro cell by the mobile communications device, and controlling the operation of the micro cell responsive to the signaling information. Moreover, the present invention provides a wireless user simultaneous access to two distinct wireless cells, one high capacity and one low capacity. When a user accesses the high capacity network, signaling information wirelessly passes directly between the two distinct wireless cells which controls operation of the high capacity cell.

[0004] In rejecting Claim 2 the Examiner cites Hunt (FIG. 2, paragraphs 0025, 0029, and 0030). Hunt describes that a user's communications parameters and/or choice of a particular pico cell may be altered responsive to user speed (physical movement), interference, and signal quality (FIG. 2, paragraphs 0025, 0029, and 0030).

[0005] The present invention in Claim 2 provides that the step of controlling the micro cell includes the step of managing access to the micro cell by the mobile communications device. Moreover, access to the micro cell is handled within the micro cell control functionality.

[0006] In rejecting Claim 8 the Examiner cites Hunt (FIG. 2, paragraphs 0025, 0029, and 0030). Hunt describes that a user's communications parameters and/or choice of a particular pico cell may be altered responsive to user speed (physical movement), interference, and signal quality (FIG. 2, paragraphs 0025, 0029, and 0030).

[0007] The present invention in Claim 8, similar to Claim 2, provides that the step of controlling the micro cell includes the step of managing access to the micro cell by the mobile communications device. Moreover, access to the micro cell is handled within the micro cell control functionality.

[0008] The level of ordinary skill in the art to which the Claimed subject matter pertains would include persons having a bachelors degree or equivalent in a relevant information technology field working roughly 40 hours per week in the architecture and/or troubleshooting of commercial wireless service provider networks.

8. Argument

A. Introduction

In general, the present principles are directed to providing a mobile device with a high-speed wireless communication connection. According to aspects of the present principles, a wireless device, such as a cellular telephone, may obtain voice and data communications service through *either or both* a conventional radio access node (hereinafter a 'macro cell') (e.g., Specification, element 14, FIG. 1) and a high-bandwidth access node (hereinafter a 'micro cell') (e.g., Specification, element 32, FIG. 2), which has a smaller coverage area and higher communications capacity per user than a macro cell (see, e.g., Specification, p. 4, lines 4-16). The micro cell enables users to access a wide area network, such as the internet (see, e.g., Specification, elements 32, 32, 38 and 40, FIG. 1; p. 3, lines 29-31; p. 4, lines 10-24).

In one advantageous implementation of the present principles, the micro cell connects to the wide area network through a link separate from the main radio access network of a wireless service provider (see e.g., Specification, FIG. 1, depicting the micro-cell (30_1, 30_2) link to the wide area network, 34, 38, as being separate from the main radio access network, 18, 20, 22 and 24). This aspect permits the provision of a high-speed connection to the wide area network without congesting the main radio access network with high-bandwidth data traffic. Additionally, although a wide area network may be utilized to transmit high-bandwidth data through micro cells, according to another aspect, the radio access network securely identifies and authenticates a wireless device by employing control signals through a direct wireless channel between one of its macro cell terminals and a micro cell upon access of the micro cell by a wireless device (see, e.g., Specification, p. 4, line 31 to p. 5, line 4; and p. 5, lines12-19).

Independent Claims 1 and 6 of the present application include the feature of communicating signaling information between a macro cell and a micro cell via a third wireless channel. Furthermore, independent Claims 1 and 6 also include the feature of communicating the signaling information in response to access of the micro cell by a wireless device.

Dependent Claims 2 and 8 of the present application are directed to managing access to the micro cell by the mobile communications device. Moreover, a Serving General Packet Radio Service Node (SGSN) assigns codes that enable a mobile communications device to communicate with a macro cell and a micro cell simultaneously (see, e.g., Specification, p. 3, lines 21-28, p. 5, lines 4-7). The references cited by the Examiner do not disclose or render obvious any of these features. Thus, Claims 1 and 6 are patentably distinct and non-obvious over the cited references, as discussed herein below. As such, Claims 1, 2, 6, and 8 are presented for review in this appeal.

B. Whether Claims 1-12 are Unpatentable Under 35 U.S.C. §103(a) With Respect To U.S. Patent Publication No.2003/0013452 A1, to Hunt in view of U.S. Patent Publication No. 2003/0185178 A1 to Chitrapu.

Claim 1 is patentable over Hunt and Chitrapu, taken singly or in combination, as the references fail to disclose or render obvious several features of Claim 1. Claimed subject matter is unpatentable under 35 U.S.C. 103(a) "if the differences between the subject matter sought to

be protected and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains." KSR International Co. v. Teleflex, Inc., 127 S.Ct.1727, 1734 (quoting 35 U.S.C. 103(a)). The subject matter of Claim 1 includes:

> A method for achieving wireless communications in a network having at least one macro cell for communicating both voice and data with a mobile communications device across a first wireless link and, at least one micro cell, with a smaller coverage area and higher capacity per user than the macro cell, for communicating data with the mobile communications device across a second wireless communication link, the method comprising the steps of:
>
> communicating signaling information directly between one micro cell and the one macro cell via a third wireless channel in response to access of the micro cell by the mobile communications device; and
>
> controlling the operation of the micro cell responsive to the signaling information.

(emphasis added).

Hunt and Chitrapu, taken singly or in combination, do not disclose or render obvious at least the Claim feature of "communicating signaling information directly between one micro cell and the one macro cell via a third wireless channel in response to access of the micro cell by the mobile communications device." First, Claim 1 is not obvious over the references because configuring a wireless communications link between a macro cell and a pico cell within the Hunt system would change the principle of operation of that system. Second, Claim 1 is not obvious over the references, because modifying the Hunt system to communicate signaling information between a macro cell and a pico cell in response to access of a pico cell by a wireless device would also change the principle of operation of the Hunt system. Accordingly, Claim 1 is patentable over Hunt and Chitrapu.

B1. Claims 1-12 are patentable and non-obvious over Hunt in view of Chitrapu, as configuring the communications channel between a macro cell and a pico cell of the Hunt system to be a wireless channel would change the network definition and configuration of Hunt.

Initially, it is respectfully pointed out to the Examiner that Claims 2-5 directly depend from Claim 1, and Claims 7-12 directly or indirectly depend from Claim 6.

None of the cited references, either taken singly or in any combination, teach or suggest, "communicating signaling information directly between one micro cell and the one macro cell via a third wireless channel in response to access of the micro cell by the mobile communications device," as recited in Claims 1-5 (with the preceding applicable to Claims 2-5 by virtue of their respective dependencies from Claim 1), or "a third wireless channel for directly communicating signaling information between the one micro cell and the one macro cell in response to access of the micro cell by the mobile communications device to enable the controller to also control the operation of the macro cell," as recited in Claims 6-12 (with the preceding applicable to Claims 7-12 by virtue of their respective dependencies from Claim 6).

As argued similarly in the appeal brief filed January 25, 2008, implementing a third wireless link between a macro cell and a pico cell within the Hunt system would change the principle of operation of the Hunt system, and thus, Claims 1 and 6 are believed to be patentable over Hunt and Chitrapu, taken singly or in combination.

If the proposed modification or combination of the prior art would change the principle of operation or would require a substantial reconstruction and redesign of the elements shown in the prior art invention being modified, then the teachings of the references are not sufficient to render the claims *prima facie* obvious. See MPEP §2143.01(VI) (citing In re Ratti, 270 F.2d 810, 123 USPQ 349 (CCPA 1959)).

Hunt discloses a hierarchical radio communications system employing a macro cell (Hunt, 104, FIG. 2) and a series of pico cells (Hunt, 108, FIG. 2) serving small areas within the coverage area of the macro cell (Hunt 104, FIG. 2). A pico cell provides high bit rate services that could not be carried by the macro cell (Hunt, para. 5). In the hierarchical system described in Hunt, control information is transmitted continuously to a wireless device through a macro cell while user-data

requiring a high bandwidth capacity is transmitted to the wireless device through a corresponding pico cell (see, e.g., Hunt, Abstract; para. 22-24). The Hunt system routes *data* first from a core network to a macro cell, second through a direct link to a pico cell, and then wirelessly (Hunt, para. 28 and 29). In contrast, the present invention transmits data from a wide-area network outside the main radio access network and any macro cell, to a micro cell.

In addition, Hunt fails to disclose that the medium of the communications link between a macro cell and a pico cell is wireless. Moreover, implementation of a wireless link between a macro cell and the pico cell in the Hunt system would require a substantial reconstruction and redesign of the Hunt system. As discussed above, the purpose of the pico cell is to provide a high bit rate connection that the macro cell cannot support. If the macro cell, which is upstream from the pico cell and the user, is configured to transmit user-data to the pico cell through a *wireless* link, then the maximum data rate achievable would be limited to that of the lesser capacity macro cell. This would eviscerate the additional bandwidth provided by the pico cells entirely, as the macro cell would limit the bandwidth capacity upstream of the pico cell. The only way to achieve data rates of the pico cell the entire way to the end user would be to replace the macro cell with a pico cell to alleviate the bottleneck. Thus, in view of the required route for data to travel in Hunt, configuring the communications link between a macro cell and the pico cell to be a wireless channel would change the principle of operation of Hunt and would require a substantial reconstruction and redesign of the Hunt system.

Furthermore, Chitrapu has been cited by the Examiner for disclosing that "...the micro cell and the one macro cell are directly communicating in response to access of the micro cell by the mobile communications device (paragraphs 74, 80, read as the C-plane server is directly connected to the RIP GW, which allows the sharing of resources for control signal processing in case such as the UE would access the RAN IP when moving outside of the RLAN)" (Office Action of September 4, 2008, p5, lines 10-14). The Examiner bases this assertion on several factors including: 1) a misunderstanding that "applicants specification defines a micro cell as a wireless LAN and a *macro cell as a WAN*"; and 2) a misplaced equivalence between an RLAN and WLAN, and RAN and WAN (Office Action of September 4, 2008, p2, lines 18-22).

First, Applicant's specification does not define a macro cell as a WAN. The specification defines a macro cell on page 3, lines 7-9 (emphasis added):

> [w]ithin the UMTS network 12, there exists at least one, and preferably, a plurality of *macro cells*, each comprising a radio access node **14** which is some times referred to as a "Node B."

Thus, the specification provides that a macro cell is element 14 in Figure 1, which is a radio access node within the UMTS network. Further, the specification defines a WAN on page 3, lines 29-32 (emphasis added):

> Within the UMTS network 12, a Gateway GPRS Support Node (GGSN) 24 provides an interface between the SGSN 22 and an IP network **26** depicted as a Wide Area Network (WAN) that could be a private data network, or a public data network such as the Internet, or combination thereof.

Thus, a WAN is a hard-wired IP public and/or private network represented as element 26 in Figure 1. This distinction is noteworthy because in legacy systems, a WAN was a requirement to allow a wireless LAN access node to reach an SGSN for authentication purposes, whereas the present invention allows for an immediate bypass of such infrastructure by allowing a micro cell to connect to a macro cell to reach an SGSN using a wireless tunnel (see, e.g., Specification p. 5, lines 7-11, and 14-19).

Secondly, there are several notable distinctions between an RLAN and WLAN, and RAN and WAN which have been explained in the Amendment dated October 21, 2008 which will be described in further detail now. The RLAN of Chitrapu is a Radio Local Area Network which provides concurrent wireless telecommunications services for several mobile devices to communicate among each other or the Internet (Chitrapu paragraph 24). This RLAN includes at least one base station (referred to as a Node B in paragraph 6) for CDMA wireless access (not wireless LAN), and at least one controller that is coupled with a group of base stations (Chitrapu paragraph 24). The WLAN, or wireless LAN, of the present invention includes access points of the structure that provides high bandwidth access (see, e.g., Specification, p. 1, lines 25-28, p. 4, lines 10-16). Thus, a notable distinction is that the wireless entry point of Chitrapu's RLAN is the low bandwidth UMTS technology, whereas the wireless entry point of the WLAN of the present invention is the broadband, high bandwidth micro cell. Further, the RAN of Chitrapu is a Radio Access Network (equivalent to UMTS Terrestrial Radio Access Network as provided in paragraph

5) that includes one or more low bandwidth UMTS wireless entry points which are referred to as Node Bs (paragraph 5). Thus, a RAN is the wireless entry point for a RLAN. In contrast, the WAN of the present invention is a Wide Area Network could include a private data network, the Internet, or a combination thereof (see, e.g., Specification, p. 3, lines 29-32, Figure 1, element 26). A WAN is a hard-wired back-end infrastructure through which signaling information needed to be passed in legacy systems to enable wireless LAN users to reach an SGSN of a UMTS network (see, e.g., Specification, p. 3, lines 24-28, p. 5, lines 4-11). Thus, a RAN is a low bandwidth UMTS wireless point of entry for mobile devices, whereas a WAN is wired back end infrastructure that allows signaling information to be bridged between UMTS and wireless LANs. As such, it is respectfully asserted that there is no equivalence between an RLAN and a WLAN and a RAN and a WAN, as suggested by the Examiner.

Additionally, Applicant respectfully asserts that the Examiners reliance on paragraphs 74 and 80 of Chitrapu is misplaced. Chitrapu is directed to a Time Division Duplex Radio Local Area Network (TDD_RLAN) which includes a Radio Access Network Internet Protocol (RAN IP) gateway that enables connectivity to the public Internet (Chitrapu, Abstract). Chitrapu teaches a single wireless entry point technology for users: low speed UMTS Node Bs (paragraph 6, Figure 4). Further, Chitrapu teaches that an RLAN service coverage area may be extended by bridging the Internet to a UMTS RLAN by using U-plane user data servers and C-plane control servers in connection with a RAN IP gateway to facilitate transformation of native 3GPP traffic to Internet traffic. (paragraphs 17, 33, 63 – paragraph 17 introduces the functionality of legacy U-plane and C-plane servers, paragraph 33 discusses connectivity between RAN IP gateway and U and C-plane servers, paragraph 63 discusses the desired result of the combination). The RAN IP gateway bridges a controller of an RLAN with the Internet in a wired fashion as is clearly shown in Figure 4, as only wireless communication exists between the wireless mobile devices and the Node Bs of the RAN. Moreover, the only point of entry into the network in Chitrapu for users is wirelessly via the UMTS Node Bs of the RAN, and as such, *the RAN IP gateway is not and can never be a macro cell or a micro cell as described in the present invention.*

Paragraph 74 of Chitrapu describes how handover is achieved in the bridged 3GPP-Internet environment he creates:

> [0074] Handover of a UE communication with one Node B within the RLAN to another Node B within the RLAN, intra-RLAN handover, is conducted in the conventional manner specified in 3GPP for intra-UTRAN handover. However, when a UE communicating with a Node B of the RLAN moves outside the RLAN service region, handover is implemented via the RAN IP gateway utilizing IP packet service, preferably, implemented with Mobile IP v4 or Mobile IP v6 as discussed above.

Thus, Chitrapu is discussing how a RAN IP gateway controls handover when a UE (user equipment) travels either within or without the RLAN. Specifically, when a user travels beyond the service coverage region, the RAN IP gateway will packetize the native 3GPP traffic, and bridge the traffic to the Internet (paragraph 74).

Further, paragraph 80 of Chitrapu describes strategic load balancing in the RLAN and C-plane and U-plane server connectivity:

> [0080] For multiple C-plane server configurations, each can be coupled to each other via a standard Iur interface, but only one is required to be directly connected to the RIP GW. This allows the sharing of resources for control signal processing which is useful when one area of the RLAN becomes much busier in other areas to spread out the signal processing between C-plane servers. A plurality of C-plane and U-plane servers can be connected in a mesh network for sharing both C-plane and U-plane resources via stacked layer protocols preferably having an IP transport layer.

Hence, Chitrapu is teaching how best to connect C-plane servers to the RAN IP gateway to allow for resource sharing and distributed processing (paragraph 80).

To summarize, Applicants specification does not define a macro cell as a WAN as suggested by the Examiner. Additionally, there is no equivalence between an RLAN of Chitrapu and a WLAN of the present invention and a RAN of Chitrapu and a WAN of the present invention. Paragraph 74 of Chitrapu is directed to handover between a UMTS RLAN and the Internet via a RAN IP gateway which is not a wireless point of entry for users in any way. Paragraph 80 of Chitrapu is directed to UMTS C-plane and U-plane connectivity and distributed processing with a RAN IP gateway.

Therefore, Chitrapu does not remotely disclose or suggest, "communicating signaling information directly between one micro cell and the one macro cell via a third wireless channel in response to access of the micro cell by the mobile communications device," as recited in Claim 1 or

"a third wireless channel for directly communicating signaling information between the one micro cell and the one macro cell in response to access of the micro cell by the mobile communications device to enable the controller to also control the operation of the macro cell," as recited in Claim 6. Even if, *arguendo*, the cited portions of Chitrapu disclosed what Examiner asserts is disclosed, the combination of Chitrapu with Hunt would be inappropriate considering the required route chosen for data to travel in Hunt. A macro cell and pico cell connected via a wireless channel would eviscerate the additional pico cell capacity. Therefore, such modifications would clearly change the principle of operation of Hunt and would require a substantial reconstruction and redesign of the Hunt system.

Accordingly, Claims 1 and 6 are patentable and non-obvious over Hunt and Chitrapu. In addition, "[i]f an independent Claim is nonobvious under 35 U.S.C. 103, then any claim depending there from is nonobvious" (MPEP §2143.03, citing *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988)). Therefore, Claims 2-5 and 7-12 are also patentable over Hunt and Chitrapu due at least to their dependencies on Claims 1 and 6. Withdrawal of the rejection is respectfully requested.

B2. Claims 1-12 are patentable over Hunt in view of Chitrapu because configuring the Hunt system to transmit signaling information to a pico cell in response to access of the pico cell by a mobile communications device would also change the principle of operation of Hunt.

Initially, it is respectfully pointed out to the Examiner that Claims 2-5 directly depend from Claim 1, and Claims 7-12 directly or indirectly depend from Claim 6.

None of the cited references, either taken singly or in any combination, teach or suggest, "communicating signaling information directly between one micro cell and the one macro cell via a third wireless channel in response to access of the micro cell by the mobile communications device," as recited in Claims 1-5 (with the preceding applicable to Claims 2-5 by virtue of their respective dependencies from Claim 1), or "a third wireless channel for directly communicating signaling information between the one micro cell and the one macro cell in response to access of the micro cell by the mobile communications device to enable the controller to also control the operation of the macro cell," as recited in Claims 6-12 (with the preceding applicable to Claims 7-12 by virtue of their respective dependencies from Claim 6).

As argued similarly in the appeal brief filed January 25, 2008, modifying the Hunt system to communicate signaling information directly between a macro cell and a pico cell in response to access of the pico cell by a wireless device would change its principle of operation. Thus, it is believed Claims 1 and 6 are patentable and non-obvious over Hunt in view of Chitrapu.

If the proposed modification or combination of the prior art would change the principle of operation or would require a substantial reconstruction and redesign of the elements shown in the prior art invention being modified, then the teachings of the references are not sufficient to render the Claims *prima facie* obvious. See MPEP §2143.01(VI) (citing In re Ratti, 270 F.2d 810, 123 USPQ 349 (CCPA 1959)).

Hunt deliberately selects a wireless link between a user and the macro cell is best for handling control information, or non-data (paragraphs 24 and 29 – where paragraph 24 describes "[t]he macro cell 102 offers best support for the control data, as it has sufficient capacity to support the traffic, and covers a wide area so a continuous link can be maintained as the user moves around without the need for an excessive number of handovers between cells"). Hunt selects the user-macro cell link for control data and avoids using a pico cell specifically to minimize handover interruptions (paragraph 24). Thus, Hunts duly articulated inventive intent would be defeated by a redesign entailing transfer of control data between the macro cell and pico cell, and would require a substantial reconstruction and redesign of the system disclosed.

Although Hunt describes transmission of throughput performance tuning information (signal to interference ratio, data rate, transmission power) between a macro cell and a pico cell in response to a scan for connection suitability and a response to a request for data (see, e.g., Hunt, paragraphs 31 and 29-30), Hunt does not disclose that signaling information is communicated between a macro cell and a pico cell in response to access of the pico cell to the wireless device.

Secondly, modifying the Hunt system to communicate control signals between a macro cell and a pico cell in response to access of the pico cell by the wireless device would change the principle of operation of the Hunt system. Signaling information communicated in response to access of the pico cell by a wireless device includes, for example, signals transmitted to control access authorization and authentication of a wireless device upon its access to a pico cell. As discussed above, in accordance with the principle of operation of Hunt, these types of control

signals are transmitted directly from a macro cell to a wireless device (see, e.g., Hunt paragraph 24). Thus, because directly transmitting such signals between a macro cell and a wireless device is a principle of operation of Hunt, modifying the Hunt system to communicate control signals between a macro cell and a pico cell in response to access of the pico cell by the wireless device would change a principle of operation of Hunt. Accordingly, Claims 1 and 6 are believed to be patentable over Hunt.

Furthermore, Chitrapu has been cited by the Examiner for disclosing that "...the micro cell and the one macro cell are directly communicating in response to access of the micro cell by the mobile communications device (paragraphs 74, 80, read as the C-plane server is directly connected to the RIP GW, which allows the sharing of resources for control signal processing in case such as the UE would access the RAN IP when moving outside of the RLAN)" (Office Action of September 4, 2008, p5, lines 10-14). The Examiner bases this assertion on several factors including: 1) a misunderstanding that "applicants specification defines a micro cell as a wireless LAN and a *macro cell as a WAN*"; and 2) a misplaced equivalence between an RLAN and WLAN, and RAN and WAN (Office Action of September 4, 2008, p2, lines 18-22).

As discussed previously, applicants' specification provides that a macro cell is element 14 in Figure 1, which is a radio access node within the UMTS network, and *not* a WAN, which is a hard-wired IP public and/or private network represented as element 26 in Figure 1 (see, e.g., Specification p. 3, lines 7-9 and lines 29-32). Further, the RLAN of Chitrapu (as defined in paragraph 24) includes one or more Node B (i.e., a RAN) wireless base stations and associated controllers, whereas the WLAN or wireless LAN of the present invention (as defined in the specification on page 4, lines 10-16) includes wireless access points of the structure that provides high bandwidth access. The RAN in Chitrapu (as defined in paragraph 5) is one or more low bandwidth UMTS entry points, whereas a WAN in the present invention (as defined in the specification on page 3, lines 29-32) is a hard-wired IP public and/or private network.

Applicant respectfully asserts that the Examiners reliance on paragraphs 74 and 80 of Chitrapu is misplaced. Chitrapu is directed to a Time Divisions Duplex Radio Local Area Network (TDD_RLAN) which includes a Radio Access Network Internet Protocol (RAN IP) gateway that enables connectivity to the public Internet (Chitrapu, Abstract). Chitrapu teaches a single wireless entry point technology for users: low speed UMTS Node Bs (paragraph 6, Figure 4). Chitrapu

teaches that an RLAN service coverage area may be extended by bridging the Internet to a UMTS RLAN by using U-plane user data servers and C-plane control servers in connection with a RAN IP gateway to facilitate transformation of native 3GPP traffic to Internet traffic. (paragraphs 17, 33, 63 – paragraph 17 introduces the functionality of legacy U-plane and C-plane servers, paragraph 33 discusses connectivity between RAN IP gateway and U and C-plane servers, paragraph 63 discusses the desired result of the combination). The RAN IP gateway bridges a controller of an RLAN with the Internet in a wired fashion as is clearly shown in Figure 4, as the only wireless communication exists between the wireless mobile devices and the Node Bs of the RAN. Moreover, the only point of entry into the network in Chitrapu for users is wirelessly via the UMTS Node Bs of the RAN, and as such, *the RAN IP gateway is not and can never be a macro cell or a micro cell as described in the present invention.*

Paragraph 74 of Chitrapu describes how handover is achieved in the bridged 3GPP-Internet environment he creates:

> [0074] Handover of a UE communication with one Node B within the RLAN to another Node B within the RLAN, intra-RLAN handover, is conducted in the conventional manner specified in 3GPP for intra-UTRAN handover. However, when a UE communicating with a Node B of the RLAN moves outside the RLAN service region, handover is implemented via the RAN IP gateway utilizing IP packet service, preferably, implemented with Mobile IP v4 or Mobile IP v6 as discussed above.

Thus, Chitrapu is discussing how a RAN IP gateway controls handover when a UE (user equipment) travels either within or without the RLAN. Specifically, when a user travels beyond the service coverage region, the RAN IP gateway will packetize the native 3GPP traffic, and bridge the traffic to the Internet (paragraph 74).

Further, paragraph 80 of Chitrapu describes strategic load balancing in the RLAN and C-plane and U-plane server connectivity:

> [0080] For multiple C-plane server configurations, each can be coupled to each other via a standard Iur interface, but only one is required to be directly connected to the RIP GW. This allows the sharing of resources for control signal processing which is useful when one area of the RLAN becomes much busier in other areas to spread out the signal processing between C-plane servers. A plurality of C-plane and U-plane servers can be connected in a mesh network for sharing both C-plane and U-plane resources via stacked layer protocols preferably having an IP transport layer.

Hence, Chitrapu is teaching how best to connect C-plane servers to the RAN IP gateway to allow for resource sharing and distributed processing (paragraph 80).

To summarize, Applicants specification does not define a macro cell as a WAN as suggested by the Examiner. Additionally, there is no equivalence between an RLAN of Chitrapu and a WLAN of the present invention and a RAN of Chitrapu and a WAN of the present invention. Paragraph 74 of Chitrapu is directed to handover between a UMTS RLAN and the Internet via a RAN IP gateway which is not a wireless point of entry for users in any way. Paragraph 80 of Chitrapu is directed to UMTS C-plane and U-plane connectivity and distributed processing with a RAN IP gateway.

Therefore, Chitrapu does not remotely disclose or suggest, "communicating signaling information directly between one micro cell and the one macro cell via a third wireless channel in response to access of the micro cell by the mobile communications device," as recited in Claim 1 or "a third wireless channel for directly communicating signaling information between the one micro cell and the one macro cell in response to access of the micro cell by the mobile communications device to enable the controller to also control the operation of the macro cell," as recited in Claim 6. Even, *arguendo*, if the cited portions of Chitrapu disclosed what Examiner asserts is disclosed, the combination of Chitrapu with Hunt would be inappropriate considering the required route chosen for control information to travel in Hunt. Control information is deliberately chosen by Hunt to travel between the macro cell and the user to minimize handover. Therefore, such modifications would clearly change the principle of operation of Hunt and would require a substantial reconstruction and redesign of the Hunt system.

Accordingly, Claims 1 and 6 are patentable and non-obvious over Hunt and Chitrapu. In addition, "[i]f an independent Claim is nonobvious under 35 U.S.C. 103, then any claim depending there from is nonobvious" (MPEP §2143.03, citing *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988)). Therefore, Claims 2-5 and 7-12 are also patentable over Hunt and Chitrapu due at least to their dependencies on Claims 1 and 6. Withdrawal of the rejection is respectfully requested.

B3. Claims 2 and 8

Initially, it is respectfully pointed out to the Examiner that Claims 2 and 8 directly depend from Claims 1 and 6 respectively.

None of the cited references, either taken singly or in any combination, teach or suggest, "wherein step of controlling the micro cell includes the step of managing access to the micro cell by the mobile communications device," as recited in Claim 2, or "wherein the control element manages access to the micro cell by the mobile communications device," as recited in Claim 8.

In the Final Office Action dated September 4, 2008, the Examiner cited paragraphs 25, 29, and 30 and Figure 2 of Hunt as disclosing the abovementioned limitations of Claims 2 and 8. Paragraph 25 of Hunt describes how handover is managed between pico cells in his system, and that the system will size data packets in accordance with a mobile users physical speed. Paragraphs 29 and 30 both discuss the handling of communication performance parameters (signal to interference ratio, data rate, transmission power), and not access parameters controlling permission, as is the case in the present invention. Furthermore, all control information originating with a mobile user specifically traverses a wireless link between the mobile user and the macro cell (paragraph 24). In contrast, the present invention provides access control parameters to be handled through the high-speed micro cell itself for authentication and signaling to be relayed to the SGSN (see, e.g., Specification, p. 5, lines 12-21).

Since Hunt specifically discloses that a macro cell, and not a micro cell should handle any control information, and only relays suitability information to pico cells for purposes of controlling performance, Hunt does not remotely disclose or suggest, "wherein step of controlling the micro cell includes the step of managing access to the micro cell by the mobile communications device," as recited in Claim 2, or "wherein the control element manages access to the micro cell by the mobile communications device," as recited in Claim 8. Accordingly, Claims 2 and 8 are patentably distinct and non-obvious over Hunt or Chitrapu taken singly or in any combination. Therefore, withdrawal of the rejection and allowance of Claims 2 and 8 is earnestly requested.

C. Conclusion

At least the above-identified limitations of the pending Claims are not disclosed or suggested by the teachings of Hunt and/or Chitrapu. Accordingly, it is respectfully requested that the Board reverse the rejection of Claims 1-12 under 35 U.S.C. §103(a).

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Respectfully submitted,

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9. APPENDIX

A. Claims

1. (Previously Presented) A method for achieving wireless communications in a network having at least one macro cell for communicating both voice and data with a mobile communications device across a first wireless link and, at least one micro cell, with a smaller coverage area and higher capacity per user than the macro cell, for communicating data with the mobile communications device across a second wireless communication link, the method comprising the steps of:

communicating signaling information directly between one micro cell and the one macro cell via a third wireless channel in response to access of the micro cell by the mobile communications device; and

controlling the operation of the micro cell responsive to the signaling information.

2. (Original) The method according to Claim 1 wherein step of controlling the micro cell includes the step of managing access to the micro cell by the mobile communications device.

3. (Original) The method according to Claim 1 wherein the step of communicating signaling information via the third wireless channel includes the step communicating signaling information from each mobile communications device separately.

4. (Original) The method according to Claim 1 wherein the step of communicating signaling information via the third wireless channel includes the step of encapsulating signaling information from a plurality of mobile communication devices in a common packet.

5. (Original) The method according to Claim 1 further comprising the step of assigning to the mobile communication device codes and power settings to enable the mobile communication device to communicate with macro cell and micro cell simultaneously.

6. (Previously Presented) A wireless communications system, comprising:

at least one macro cell for communicating both voice and data with a mobile communications device across a first wireless link;

at least one micro cell having a smaller coverage and higher capacity per user than the macro cell for communicating data with the mobile communications device across a second wireless communication link;

a control element for controlling at least the operation of the macro cell; and

a third wireless channel for directly communicating signaling information between the one micro cell and the one macro cell in response to access of the micro cell by the mobile communications device to enable the controller to also control the operation of the macro cell.

7. (Original) The system according to Claim 6 wherein the control element comprises a Service General Packet Radio Service Node (SGSN).

8. (Original) The system according to Claim 6 wherein the control element manages access to the micro cell by the mobile communications device.

9. (Original) The system according to Claim 6 wherein each micro cell separately communicates signaling information from each mobile communication device across the third wireless channel.

10. (Original) The system according to Claim 6 wherein the signaling information of each of a plurality of micro cells is encapsulated into a common packet for communication across the third wireless communication channel.

11. (Original) The system according to Claim 6 wherein the control element assigns to the mobile communication device codes and power settings to enable the mobile communication device to communicate with macro cell and micro cell simultaneously.

12. (Original) The system according to Claim 7 wherein the control element further comprises:

a Gateway General Packet Radio Service Serving Node (GGSN); and

an Internet Protocol tunnel for linking the GGSN to an Internet Protocol gateway.

B. Claim Support and Drawing Analysis

Independent Claim 1 is directed to a method for achieving wireless communications in a network having at least one macro cell (e.g., element 14, FIG. 1) for communicating both voice and data with a mobile communications device (e.g., element 16, FIG. 1) across a first wireless link (e.g., element 17, FIG. 1) and, at least one micro cell (e.g., element 32, FIG. 1), with a smaller coverage area and higher capacity per user than the macro cell (see e.g., p. 4, lines 10-16), for communicating data with the mobile communications device across a second wireless communication link (e.g., element 33, FIG. 1), the method comprising the steps of: communicating signaling information directly between one micro cell and the one macro cell via a third wireless channel (e.g., element 50, FIG. 1) in response to access of the micro cell by the mobile communications device (see, e.g., p. 4, line 31 to p. 5, line 17); and controlling the operation of the micro cell responsive to the signaling information (see, e.g., p. 5, lines 2-7).

Dependent Claim 2 is directed to a method for achieving wireless communications in a network (as recited in Claim 1) wherein the step of controlling the micro cell includes the step of managing access to the micro cell (see, e.g., p. 3, lines 24-28, p. 5, lines 2-4, element 22, FIG. 1)by the mobile communications device.

Independent Claim 6 is directed to a wireless communications system, comprising at least one macro cell (e.g., element 14, FIG. 1) for communicating both voice and data with a mobile communications device (e.g., element 16, FIG. 1) across a first wireless link (e.g., element 17, FIG. 1); at least one micro cell (e.g., element 32, FIG. 1) having a smaller coverage and higher capacity per user than the macro cell (see e.g., p. 4, lines 10-16) for communicating data with the mobile communications device across a second wireless communication link (e.g., element 33, FIG. 1); a control element (e.g., element 22, FIG. 1) for controlling at least the operation of the macro cell (see, e.g., p. 5, lines 2-7); and a third wireless channel (e.g., element 50, FIG. 1) for directly communicating signaling information between the one micro cell and the one macro cell in response to access of the micro cell by the mobile communications device to enable the controller to also control the operation of the macro cell (see, e.g., p. 4, line 31 to p. 5, line 17).

Dependent Claim 8 is directed to a wireless communications system (as recited in Claim 6) wherein the control element manages access to the micro cell (see, e.g., p. 3, lines 24-28, p. 5, lines 2-4, element 22, FIG. 1) by the mobile communications device.

C. Means or Step Plus Function Analysis

None.

D. Evidence

None.

E. Related Cases

None.